



Case report

An unusual case of attempted suicide by rectal administration of parathion

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ABSTRACT

Although organophosphate (OP) poisoning is well known, unusual routes of administration of OP compounds are reported occasionally. Herein, a case of self administration of parathion, an OP compound, into the rectum using a six inches (15 cm) nozzle of a sprayer in a 35-year-old man is highlighted along with probable mechanisms for rapid absorption and severe systemic toxicity.

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1. Introduction

Intentional and unintentional organophosphate (OP) poisoning continues to cause morbidity and mortality in India because of easy availability of these compounds as agrochemicals.^{1–4} Although OP poisoning is common, unusual routes of self administration of OP compounds are reported occasionally.^{5,6} Herein we report an unusual case of severe systemic toxicity following self administration of parathion, an OP compound, via the rectum.

2. Case report

A 35-year-old man, known hypertensive but not on regular medications was brought to the emergency department of a hospital in an unconscious state. His relatives narrated a history of seizures and emptying of bowel and bladder. There was no history of trauma or poisoning revealed. On examination his blood pressure was 90/60 mmHg and the pulse was 55/min (regular). The patient was unconscious with a Glasgow coma scale (GCS) of 3/15 and pinpoint pupils. In view of poor GCS his airway was protected

and mechanically ventilated. His oropharynx was full of frothy secretions. Auscultation revealed normal heart sounds, no murmur or gallop. There were coarse crackles extending up to the apices of both the lungs. The central nervous system examination showed an increased tone in all the four limbs but the neck was supple. He had an abnormal jerky movement. His planter was up going on the right with no response on the left. The limbs were cold and clammy. His capillary blood glucose level was 365 mg/dl. His arterial blood gases and electrocardiogram were normal. Toxicological analysis of the Ryle's tube aspirate did not detect any common illicit or prescribed drugs or pesticides. A provisional diagnosis of brain stem dysfunction and pontine hemorrhage was made. CT brain was not contributory. He was shifted to the intensive care unit (ICU) for further management.

In the ICU he had recurrent bradycardia, which was corrected with atropine. His hematological, biochemical and serum electrolyte values were within the normal limits. The presence of pinpoint pupils, recurrent bradycardia despite atropine, increased secretions and high blood sugar raised a suspicion of OP poisoning which was confirmed by low level of serum cholinesterase. He regained consciousness with atropine and supportive therapy. The next day he admitted that he inserted a six inches (15 cm) long nozzle of a sprayer into his anal orifice after lubricating it with castor oil and

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sprayed parathion 40% in xylene with the intention of committing suicide. He developed toxicity within 30 min of exposure. He did not have any blister or pustules around the anus. On the third day of admission, he had a bout of rectal bleeding. Sigmoidoscopy revealed mucosal erosions with bleeding points which were managed symptomatically. He was subsequently weaned off from the ventilator after 7 days. Following psychiatric counseling he was discharged from the hospital on the 14th day without any sequelae.

3. Discussion

Rectal administration of recreational drugs is reported in the literature.^{7,8} However, to the best of our knowledge we believe that this is the first case of self administration of parathion into the human rectum to be reported in the literature. Parathion is an OP compound with high human toxicity with an oral LD50 of 6–24 mg/kg in rats.⁹ It inhibits cholinesterase enzyme when it is oxidized to paraoxon and produces the symptoms within 10–20 min.⁹ The clinical course of our patient was nothing unusual, but the route of administration via the rectum was unusual and uncommon. Rectal drug delivery systems are traditionally used in pediatric population to deliver drugs in a vomiting or uncooperative child. Drugs are rapidly absorbed from the rectum because of the dense network of venous drainage in this region. The veins in the upper portion of the rectum drain into the portal circulation and the lower portion into the systemic circulation.¹⁰ As the patient developed systemic toxicity within 30 min of exposure, we propose that the poison might have entered the systemic circulation via the middle and inferior rectal veins and escaped the first-pass effect with increased bioavailability.

Quick onset of symptoms in the present case was due to enhanced absorption in view of the availability of parathion in liquid xylene solution and the rectal environ (increased blood supply of the rectal mucosa, elevated rectal temperature compared to ambient air, an empty rectum, and alkaline pH of the rectum that enhances hydrolysis of parathion). The bioavailability of parathion and onset of action in relation to different routes are not well defined or explored. Our patient had rectal bleeding from the erosive ulceration which was probably due to the direct local effect of parathion or any of its metabolites. Suicidal attempt by rectal administration of isopropyl alcohol as enema and insertion of fentanyl patch are reported in the literature.^{11,12} Various web sites mention about the rectal administration of recreational drugs which indicates that this mode is becoming a popular route of abuse or for suicidal attempts.¹³ Sensational media coverage on parasuicide events could lead to “copycat” acts.¹⁴ On inquiry, our patient had confessed that he had recently seen a television programme with a scene on rectal administration of a poison to commit suicide and was aware of his child receiving drugs through the ano-rectal route for therapeutic purpose on a couple of occasions. This prior knowledge had influenced him to consider rectal administration of the OP compound for self harm.

4. Conclusion

The clinical toxidrome of poisoning should be considered as one of the differential diagnoses in the emergency department even if the history is not contributory. Clinicians and emergency physicians should be aware of the rectal route of administration as a potentially dangerous route of exposure.

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Conflict of interest

None declared.

Ethical approval

None.

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